

**03050104-010**  
**(Wateree River/Lake Wateree)**

**General Description**

Watershed 03050104-010 is located in Fairfield and Kershaw Counties and consists primarily of the **Wateree River** and its tributaries as it flows through Lake Wateree. The watershed occupies 208,729 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Wilkes-Wateree-Rion-Madison series. The erodibility of the soil (K) averages 0.24; the slope of the terrain averages 17%, with a range of 2-45%. Land use/land cover in the watershed includes: 85.9% forested land, 6.3% water, 3.5% scrub/shrub land, 2.2% agricultural land, 1.3% forested wetland, 0.7% urban land, and 0.1% barren land.

The Catawba River flows out of the Cedar Creek Dam and is joined by Cedar Creek (Bell Branch, Rocky Creek, Gar Creek), McDowell Creek, Crooked Creek, and the Big Wateree Creek watershed (03050104-020) to form the headwaters of the Wateree River and Lake Wateree. Duke Power Company oversees operation of Lake Wateree, which is used for power generation, water supply, and recreational purposes. Little Wateree Creek originates near the Town of Winnsboro and accepts drainage from Horse Creek, McCulley Creek, Ready Creek, Minton Creek (White Oak Branch), and Horse Branch before flowing into the Big Wateree Creek embayment. Langley Branch enters the lake just downstream of the confluence, and Taylor Creek and Dutchmans Creek (Cedar Fork, Lots Fork) form arms of the lake near Lake Wateree State Park. Moving downlake, streams draining into the lake include: Singleton Creek (McDow Creek, Rocky Branch), Rochelle Creek, June Creek, Fox Creek, Beaver Creek (Tranham Creek, Showerbath Branch, Little Beaver Creek), Stillhouse Branch, Colonel Creek, and White Oak Creek. There are a total of 409.8 stream miles and 11,855.5 acres of lake waters in this watershed, all classified FW.

**Water Quality**

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
CW-231	W	FW	CATAWBA R. 50 YDS DOWNSTREAM OF CEDAR CK CONFLUENCE
CW-040	S	FW	LITTLE WATeree CREEK AT S-20-41 5 MI E OF WINNSBORO
CW-692	BIO	FW	DUTCHMANS CREEK AT S-20-21
CW-076	BIO	FW	BEAVER CREEK AT S-28-13
CW-208	P	FW	LAKE WATeree, DUTCHMANS CREEK ARM AT S-20-101
CW-207	P	FW	LAKE WATeree AT END OF S-20-291
CW-693	BIO	FW	WHITE OAK CREEK AT S-28-696
CW-209	P	FW	LAKE WATeree AT SMALL ISLAND 2.3 MI N OF DAM

**Catawba River (CW-231)** - Aquatic life uses are fully supported; however there was a high concentration of chromium measured in 1998. Recreational uses are fully supported.

**Lake Wateree** - Lake Wateree has a watershed covering 863.2 km<sup>2</sup> (up to the Cedar Creek Reservoir Dam), a surface area of 5548.4 hectares, and a maximum and mean depth of 19.5m and 6.9m, respectively. Lake Wateree has an average annual retention time of 27 days. The lake was treated

annually from 1994 to 1996 with aquatic herbicides in an attempt to control the growth of aquatic macrophytes near a public boat ramp. The problem has been controlled and no further treatments were necessary.

There are three monitoring sites on Lake Wateree and recreational uses are fully supported at all sites. In the Dutchmans Creek arm of the lake (**CW-208**), aquatic life uses are partially supported due to pH excursions. This is compounded by a significant decreasing trend in dissolved oxygen concentrations and significant increasing trends in turbidity, total phosphorus concentrations, and total suspended solids concentrations. In addition, elevated phosphorus and algae concentrations indicate adverse impacts to aquatic life due to eutrophication. In sediments, a very high concentration of cadmium was measured in the 1998 sample. Also in sediment, a very high concentration of chromium was measured in the 1998 sample and high concentrations of chromium were measured in the 1994, 1996, and 1997 samples. Very high concentrations of copper were measured in the 1997 and 1998 samples, and high concentrations were measured in the 1994-1996 sediment samples and a high concentration of lead was measured in the 1997 sample. Nickel concentrations were very high in the 1997 and 1998 sediment samples, and high in the 1994 and 1996 samples. Zinc concentrations in sediment were very high in the 1996-1998 samples, and high in the 1994 and 1995 samples. P,P'DDE (a metabolite of DDT) was detected in the 1995 and 1998 sediment samples. Although the use of DDT was banned in 1973, it is very persistent in the environment.

Further downlake (**CW-207**), aquatic life uses are fully supported; however there is a significant decreasing trend in dissolved oxygen concentrations and significant increasing trends in turbidity and total suspended solids concentrations. In addition, elevated phosphorus and algae concentrations indicate adverse impacts to aquatic life due to eutrophication. In sediments, a very high concentration of cadmium was measured in the 1998 sample. Also in sediment, very high concentrations of chromium were measured in the 1994, 1997, and 1998 samples and high concentrations of chromium were measured in the 1995 and 1996 samples. Very high concentrations of copper and zinc were measured in the 1994, 1996, 1997, and 1998 sediment samples, and a high concentration of copper and zinc were measured in the 1995 sample. Lead concentration was very high in the 1994 sediment sample and high in the 1996 and 1997 samples. Nickel concentrations were very high in the 1994, 1997, and 1998 sediment samples, and high in the 1996 sample. P,P'DDE was detected in the 1994, 1995, and 1998 samples, and the pesticide malathion was detected in the 1994 sediment sample.

At the furthest downlake site (**CW-209**), aquatic life uses are fully supported; however there is a significant decreasing trend in dissolved oxygen concentrations and a significant increasing trend in turbidity. In addition, elevated phosphorus and algae concentrations indicate adverse impacts to aquatic life due to eutrophication. There is also a significant decreasing trend in pH. In sediments, a very high concentration of cadmium was measured in the 1998 sample. Also in sediment, very high concentrations of chromium were measured in all five annual sediment samples: 1994-1998. Very high concentrations of copper were measured in the 1994, and 1996-1998 samples, and a high concentration was measured in the 1995 sediment sample. Lead concentrations were very high in the 1994 and 1995 sediment samples and high in the 1996 and 1997 samples. Nickel concentrations were very high in the 1994, 1995, 1997, and 1998 sediment samples, and high in the 1996 sample. Zinc concentrations in sediment were very high in the 1994-1996, and 1998 samples, and high in the 1997 sample. P,P'DDE was detected in the 1994, 1995, and 1998 samples, and malathion was detected in the 1994 sediment sample.

**Little Wateree Creek (CW-040)** - Aquatic life uses are partially supported due to dissolved oxygen excursions, compounded by a significant decreasing trend in dissolved oxygen concentrations. Recreational uses are partially supported due to fecal coliform bacteria excursions; however a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

**Dutchman Creek (CW-692)** - Aquatic life uses are fully supported based on macroinvertebrate community data.

**Beaver Creek (CW-076)** - Aquatic life uses are fully supported based on macroinvertebrate community data.

**White Oak Creek (CW-693)** - Aquatic life uses are fully supported based on macroinvertebrate community data.

## **NPDES Program**

### **Active NPDES Facilities**

<b>RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD) COMMENT</b>	<b>NPDES# TYPE LIMITATION</b>
LAKE WATEREE NOSCA PINES RANCH PIPE #: 001 FLOW: .025	SC0033651 MINOR DOMESTIC EFFLUENT
LAKE WATEREE JONES & FRANK WATEREE STATE PARK PIPE #: 001 FLOW: M/R (INACTIVATED 9/20/99)	SC0042048 MINOR INDUSTRIAL EFFLUENT
LAKE WATEREE US AIR FORCE/WATEREE RECREATION PIPE #: 001 FLOW: 0.01	SC0044440 MINOR INDUSTRIAL EFFLUENT
MCCULLY CREEK WINNSBORO/WTP PIPE #: 001 FLOW: 0.01	SCG645027 MINOR DOMESTIC EFFLUENT
READY CREEK RICHARD WINN ACADEMY PIPE #: 001 FLOW: .00375 (INACTIVATED 9/1/99)	SC0028134 MINOR DOMESTIC WQL FOR NH3-N, TRC, DO

## Nonpoint Source Management Program

### ***Camping Facilities***

<b><i>FACILITY NAME/TYPE RECEIVING STREAM</i></b>	<b><i>PERMIT # STATUS</i></b>
LAKE WATEREE STATE PARK/FAMILY LAKE WATEREE	20-307-0010 ACTIVE
LAKE WATEREE CAMPGROUND/FAMILY LAKE WATEREE	28-307-8502 ACTIVE
NOSOCA PINE RANCH/RESIDENT LAKE WATEREE	28-305-8500 ACTIVE

### ***Mining Activities***

<b><i>MINING COMPANY MINE NAME</i></b>	<b><i>PERMIT # MINERAL</i></b>
FAIRFIELD COUNTY DR. FLOYD PIT	0332-39 SAND
FAIRFIELD COUNTY CARLISLE PIT	0336-39 SAND
FAIRFIELD COUNTY ROCHELLE MINE	0848-39 CLAY
GRANITE PANELWALL COMPANY CAROLINA DIAMOND GRAY QUARRY	0012-55 GRANITE
GEORGIA STONE, INC. SOUTH CAROLINA GRANITE MINE	0556-55 GRANITE
CAROLINA QUARRIES CONGAREE QUARRY	0405-57 GRANITE

### ***Groundwater Contamination***

The groundwater located in the area of the aboveground storage tanks owned by Winnsboro Petroleum Company (#13768) is contaminated with petroleum products as a result of spills/leaks. The facility is in the assessment phase. The surface water affected by the groundwater contamination is McCulley Creek, and samples are to be collected.

### ***Water Supply***

<b><i>WATER USER (TYPE) STREAM</i></b>	<b><i>REGULATED CAPACITY (MGD) PUMPING CAPACITY (MGD)</i></b>
LUGOFF-ELGIN WATER AUTH. (M) LAKE WATEREE	5.2 7.8
CITY OF CAMDEN (M) LAKE WATEREE	6.0 -----

## **Growth Potential**

There is a moderate to high potential for continued residential and commercial development adjacent to Lake Wateree and the Town of Winnsboro. Public water is available along S.C. Hwy. 34, which runs between the Towns of Winnsboro and Ridgeway, and plans are being developed to extend public sewer along this corridor.

## **Watershed Protection and Restoration**

### ***Special Projects***

#### **NPS Assessment and TMDL for Phosphorus in the Catawba River Basin**

SCDHEC has contracted with the University of South Carolina to quantify relationships between land use and water quality in the Catawba River Basin. The project will evaluate these relationships using a watershed model, which will be used to develop a TMDL for total phosphorus in Fishing Creek Reservoir, Cedar Creek Reservoir, and Lake Wateree. The TMDL is being developed in cooperation with the North Carolina Division of Water Quality and will involve stakeholders in the basin. Additional information about the TMDL development process can be found in Appendix B.